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of the ligament is released. The lens is flattened, or its optical axis is shortened, as soon as the ciliary muscle is relaxed; the ligament being drawn upon by the elasticity of the sclera, and perhaps it is somewhat aided by the intraocular pressure. Dr. Sharp stated that as far as he knew the mechanism of the "lenticular expansion" had not been described. This action is easily seen on turning to the development of the lens. The lens is formed by an invagination of the external ectoderm soon closing, and as a result we have a spherical vesicle, soon enclosed in the mouth of the secondary optic vesicle. When this has taken place, the posterior wall of the lens-vesicle thickens, that is, the posterior cells commence to elongate, and grow toward the anterior wall of the vesicle, the cells of which remain, generally speaking, of the same size, and later form the so-called epithelium of the lens. Keeping this structure in view, we see that when pressure is brought to bear on the lens, these elongated cells of the posterior wall are compressed in their longitudinal axis, so that as soon as the pressure is removed, they simply straighten out. This will also account for the fact, that the anterior face of the lens is the only portion that moves in the act of accommodation for distance. In the adult lens this structure is to a certain extent lost, and the lens is generally described as being made up of layers concentrically arranged. This is true, but the embryonic "impression" still remains. If we supposed that the lens were made up of layers concentrically arranged and *so formed*, when the capsular ligament "slacked up" the tendency of the lens would be to shorten its optical axis instead of lengthening it.

The Opal Mines of Queretaro, Mexico.—Dr. A. E. FOOTE remarked that the locality referred to is particularly interesting as being the only one in North America that is being worked solely for the production of gems.

The opals of Mexico have been celebrated since 1820, when Karsten and Del Rio referred to the opals of Zimapan and that neighborhood as being in many respects equal and in some respects superior to the Hungarian. There are quite a number of fine localities from which considerable quantities have been exported to Europe, so that among the lovers of the beautiful, Mexico is as well known for its brilliant opals as for the soft and exquisite tints of the tecali or Mexican onyx.

As in the case of diamonds from Brazil and Africa, there is a jeweler's prejudice against the new locality, and they are considered even more unlucky and liable to break than those of Hungary. I have, however, seen in the possession of Senor Cosio magnificent specimens that had been taken out over ten years, and were without a flaw.

The locality in Queretaro is the only one in Mexico that is being worked to any extent now.

The principal mines are on the hacienda of Esperanza, where the opal was discovered, by a servant, ten years ago. No mines were taken up until 1870, when Dr. Jose Maria Siurob located the mine of Santa Maria Iris. The fine specimens secured during the next few years created so much excitement that a large number of mines were located, most of which are now abandoned. The district is quite extensive, having been traced over a region about twenty leagues long by thirty-one leagues wide. At Ciervo, fourteen leagues from Esperanza, the opal is quite abundant, though none of the precious variety of good quality has been found.

The mines of Esperanza can only be reached on horseback, and the ride from Queretaro is a very hard one. San Juan del Rio, said to be the nearest large town where one can get accommodations for the night, is ten leagues to the S. E.

Leaving the Mexican Central Railroad and crossing a rich alluvial plain, covered with fields of corn and the so-called century plant, surrounded by fences of *Cereus giganteus*, we came to the foot hills. Here at once abundant evidences of volcanic action were seen. Round nodules of obsidian, large masses of agate, milk opal, and other siliceous products, were mixed with the cacti on every side. The rough trail soon led into the dry bed of a barranca, where porphyritic trachyte carrying the common varieties of opal were quite abundant; the trend of these porphyritic banks was from S. E. to N. W. The color of the rock is reddish gray. As the barranca terminated in a narrow valley, on the mountains on each side were seen the red dumps standing out conspicuously upon the gray surface.

Of the mines that he visited only one, the Jurado, was being worked. The deposits of opal-bearing trachyte are so irregular that the mines are soon exhausted.

The Jurado is an immense excavation about 150 feet deep, several hundred feet long, and about 100 feet wide. At the bottom, the porphyritic rock seemed to be thoroughly impregnated with hydrated silica, even occasionally being converted into common opal.

The general appearance of the rock furnishes a very good clue to the character of the opals that it may contain. Thus if the rock is less red in color and close and compact in texture, fire opals and related forms abound, while if the rock is deep red in color or clayey and pockety, the Hungarian, harlequin, and milky opals are much more abundant.

There is no locality of which he had ever heard where such an extraordinary variety of opals can be found in a single matrix. The same small piece of rock will show fire opal, fire opal showing green and blue reflections, the Hungarian, harlequin, girasol, hyalite, milk, and almost every variety. The harlequins showing a mosaic of brilliant minute spangles of color in a milky base, vie with the broad sheets of dazzling blue, red and

green. Perhaps, like Ruskin, we should give the palm to the "Milky opals that gleam and shine like sullen fires in a pallid mist."¹

Vitality of Mollusca.—Prof. HEILPRIN called attention to a remarkable case of vitality among certain members of the fauna of the New Jersey coast. Specimens of *Nassa obsoleta* collected by Miss Emma Walter, at Atlantic City just one year ago, and retained dry during the entire year of their accidental captivity, were stated to be still alive, although subjected for several months to the abnormal temperature occasioned by proximity to a heated wall surface. This, the speaker contended, was perhaps the most extraordinary instance of vitality known among the marine mollusca, although among the terrestrial and freshwater forms, especially among those which undergo a partial hibernation, longer periods of semi-adaptation to imposed conditions have been noted. Instances of such survivals were cited by the speaker and Prof. Leidy.

JUNE 15.

Mr. JOHN H. REDFIELD in the chair.

Twenty-two persons present.

JUNE 22.

Mr. THOS. MEEHAN, Vice-President, in the chair.

Thirteen persons present.

A paper, entitled "Notes on the Paspali of Le Conte's Monograph," by Geo. Vasey, was presented for publication.

Note on Quercus dentata.—Mr. THOMAS MEEHAN exhibited specimens of *Quercus dentata* with female flowers, from a specimen raised from an acorn received from Japan ten years ago. It is of very rapid growth, being now eighteen feet high, and six inches in circumference. So recently as the issue of the volume of *De Candolle's Prodromus*, it was noted that the fruit was unknown. Some account of these female flowers might have an interest. Like our annual fruited oaks the flowers appear at the end of the young growth, in pairs on peduncles about half an

¹ The speaker had collected at the opal mines a number of specimens of minute bright white rhombohedrons showing the basal planes; these have been examined by Prof. E. S. Dana, who pronounces them alunite. Well crystallized alunite is not common, and he believed this is the first time its appearance has been noted in North America.